Newsweek

The Allergy Epidemic

We've Conquered Most Childhood Infections, But Extreme Reactions To Everyday Substances Pose A New Threat

by Jerry Adler (/authors/jerry-adler.html) **September 22, 2003**

The first indication that something was not quite right with David Adams was subtle, a mild rash around his mouth after nursing. Luckily, the second clue, at the age of 3 months, was not so subtle: angry hives that erupted over his entire body during a plane trip. After the family returned home to Georgia, a specialist determined that David was among the 6 to 8 percent of children under the age of 3 with an allergy to food--in his case, peanuts. His sensitivity was so acute that the hives may have been caused by the residue of peanuts on his parents' fingers, and the rash by his mother's eating a peanut-butter sandwich and excreting tiny amounts of peanut protein in her breast milk. What made the episode lucky was this: on a day two years later, when David began vomiting and gasping after chomping an energy bar that had escaped his parents' anti-peanut scrutiny, his mother could inject him with epinephrine and save his life. Implausible as it seems, David's condition is at the cutting edge of modern pediatric medicine, right up there with hay fever.

If a popular magazine had run a children's health issue a hundred years ago, the first article might have been about diphtheria or cholera--external threats that the West has largely conquered by antibiotics and sanitation. Instead we are examining allergies, a self-generated danger, the result of an immune system out of sync with its surroundings. These are among the leading challenges of the next century, a threat that may in part be an unintended consequence of our triumph over the infectious scourges of the past.

Speaking of hay fever, or "seasonal allergic rhinitis," the incidence of this annoying sensitivity to tree, grass or ragweed pollen has increased remarkably just since 1996--from 6 percent of American children 18 and under to 9 percent, according to the National Center for Health Statistics. All allergies seem to be on the rise, in fact, but "it's not just that more kids have allergies," says Dr. Marc Rothenberg, director of allergy and immunology at Cincinnati Children's Hospital. "The severity of those allergies has also increased."

An allergy is an overreaction by the immune system to a foreign substance, which can enter the body through a variety of routes. It can be inhaled, like pollen or dander, the tiny flakes of skin shed by domestic animals. It can be injected, like insect venom or penicillin, or merely touch the skin, like the latex in medical gloves. Or it can be ingested. According to the Food Allergy & Anaphylaxis Network, almost any food can trigger an allergy, although eight categories account for 90 percent of all reactions: milk, eggs, peanuts (technically, a legume), tree nuts, fin fish, shellfish, soy and wheat. (Allergies have nothing to do with the condition known as food intolerance; people who lack an enzyme for digesting dairy products, for instance, may suffer intestinal problems, but they are not allergic to milk.)

For reasons not fully understood, in some people these otherwise harmless substances provoke the same reactions by which the body attempts to rid itself of dangerous pathogens. These may include sneezing, vomiting and the all-purpose localized immune-system arousal known as inflammation. The lungs may be affected; allergies are a leading trigger for asthma attacks. In extreme cases, the reaction involves virtually all organ systems and proceeds to anaphylaxis, a dramatic drop in blood pressure accompanied by extreme respiratory distress that may be fatal without prompt treatment. Which is why, to this day--and possibly for the rest of his life--David Adams never sets foot outside his home without an emergency supply of epinephrine.

What can underlie such a self-destructive reaction? An infant who grows violently ill in the presence of as little as one hundredth of a peanut almost surely has some sort of genetic predisposition. Indeed, there is a strong inherited component in allergies. If one parent has an allergy, chances are one in three that the child will be allergic, according to the Asthma and Allergy Foundation of America. If both parents have allergies, the odds rise to 70 percent. But *the children aren't necessarily allergic to the same things as the parents*--strongly suggesting that some other factor must be at work as well. And genetics cannot explain the rapid rise in allergies over the past few years or, for that matter, centuries. "The human race hasn't changed that much genetically in the last 200 years," since hay fever first came to the attention of doctors a single case at a time, says Dr. Andrew Saxon, chief of clinical immunology at UCLA.

So something must have changed in the environment--specifically, in the environment of developed nations, and especially their cities, where allergies are far more prevalent than in rural China and Africa. One obvious place to look is air pollution. Studies by Saxon and his colleague David Diaz-Sanchez have found a strong correlation between pollutants--diesel exhaust and cigarette smoke--and the development of allergies. Researchers don't believe pollution is the whole story, though; allergies have continued to climb even as smoking and air-pollution rates have fallen in recent decades. But industrialization has also brought about declines in infectious diseases and close exposure to farm animals. The "hygiene hypothesis" holds that it is precisely these (mostly desirable) trends that have contributed to the rise in allergies. The human immune system, which evolved in a natural environment teeming with hostile bacteria and parasites, finds itself uncomfortably idle in the antiseptic confines of the modern suburb, and, failing to mature properly, takes out its frustration on harmless peanuts and shrimp. Numerous studies have lent support to this general notion, notably one last year that showed a strong negative correlation between allergies and exposure to endotoxins, which are bacterial remains shed by farm animals. Research by Dr. Dennis Ownby of the Medical College of Georgia shows that children growing up with two or more pets, either cats or dogs, had a decreased risk of allergies--and not just to pet dander, but other unrelated allergens as well. But although many researchers accept the hygiene hypothesis in outline, the emerging picture is of "a complicated relationship, where dose and timing of exposure" play important but still uncertain roles, says Dr. Scott Weiss of Harvard.

So the hygiene hypothesis has yet to generate any concrete prescriptions (unless you count The New England Journal of Medicine's August 2000 editorial headlined please, sneeze on my child). The eventual hope, says Ownby, is for a way to "artificially stimulate the immune system to reduce [allergy] risk without having all these diseases." Meanwhile, though, researchers are developing new drug therapies that go beyond epinephrine (for emergency treatment of anaphylaxis) and the growing array of over-the-counter antihistamines. (Histamine is a key substance in the cascade of biochemical events that constitute an allergic reaction.) Newer drugs, like Singulair and Xolair--just approved by the Food and Drug Administration in June for allergy-related asthma--block other chemicals in the chain. And even ordinary activated charcoal could be useful in blocking peanut allergies, according to a new study; if taken immediately it may neutralize the allergenic proteins in the stomach.

Pediatricians have also begun taking allergies more seriously. One key bit of advice to mothers is to breast-feed infants exclusively for six months. Delaying children's exposure to novel foods in this way is the "hallmark for food-allergy prevention," says the American Academy of Pediatrics. Nursing mothers should also be on the lookout for signs of a secondhand food reaction in their infants, including diarrhea, vomiting or itchy rashes (not counting diaper rash). If these rare reactions occur, the mother may want to avoid drinking milk, or eating eggs, fish, tree nuts and especially peanuts. Peanuts, in fact, are the one food the AAP recommends that a woman avoid, not only while nursing but also while pregnant, because of their allergic potential. For the same reason, the longer you can hold off feeding your child peanut butter, the better: the AAP suggests waiting until 3. Cow's milk, by contrast, is usually safe after the 1st birthday.

And once an allergy has been diagnosed, the only thing to do is what David Adams's parents did: draw a *cordon sanitaire* around the child. Again, this is especially important for peanut allergies. Unfortunately, peanuts and peanut butter are ubiquitous, found in many Asian and Mexican dishes, in baked goods--and in practically every other child's lunchbox. Peanut-free zones in school lunchrooms have become a vital amenity in many communities, but even so, parents with severely allergic children are constantly on alert--writing to food companies to double-check lists of ingredients, outlawing even innocuous bakery products (a spatula that came into contact with a peanut-butter cookie can transfer a dangerous dose of allergen to an oatmeal-raisin one) and equipping babysitters and teachers with dedicated cell phones and walkie-talkies for emergencies. Milk, another potentially potent allergen, is, if anything, even harder to avoid. "You're sitting at a [school] cafeteria table and someone across from you spills milk," says Denise Bunning, of suburban Chicago, describing her nightmare scenario; Bunning's two sons, Bryan, 9, and Daniel, 7, are both allergic to milk, along with several other foods. At the age of 4, Bryan went into anaphylaxis after eating a jelly worm from a dispenser that had previously held milk-chocolate candies.

Susan Leavitt of New York, whose 13-year-old son, David Parkinson, is allergic to milk products, eggs, fish, nuts and mustard, goes so far as to check out school art supplies; a fourth-grade teacher once mentioned adding eggs to tempera paint for a better texture. There's a lot he can't have--pizza, to start with--but a lot of it is stuff you wouldn't necessarily want your kid to have anyway. And thanks to her vigilance, her home-cooked and pre-frozen meals and New York's ubiquitous fruit and vegetable markets, David is a healthy, normal boy, an avid skier--and alive.